

REMARKS

This application has been carefully reviewed in light of the Office Action of April 20, 2006, wherein:

- A. Claims 1-49 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention;
- B. Claims 1-5, 18, 24-28, and 41 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al. in view of US Patent No. 4,627,103 to Fukuhara;
- C. Claims 13-15, 19-21, 36-38, and 42-45 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al. in view of US Patent No. 4,627,103 to Fukuhara and in further view of US Patent No. 6,484,284 to Smallcomb;
- D. Claims 16, 17, 39, and 40 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al. in view of US Patent No. 4,627,103 to Fukuhara and in further view of US Patent No. 6,484,284 to Smallcomb and in further view of US Patent No. 5,394,439 to Hemmati;
- E. Claims 22 and 23 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al. in view of US Patent No. 4,627,103 to Fukuhara and in further view of US Patent No. 6,484,284 to Smallcomb and in further view of US Patent No. 6,901,117 to Classon et al.; and
- F. Claims 46-49 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al. in view of US Patent No. 4,627,103 to Fukuhara and in further view of US Patent No. 6,484,284 to Smallcomb and in further view of US Patent No. 6,201,817 to Sullivan.

Claim Rejections – 35 U.S.C. §112

- A. The Examiner rejected Claims 1-49 under 35 USC. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner stated “[c]laims 1-49 recite the limitations ‘A system/method for estimating a signal-to-noise ratio related

parameter' [or] 'A system/method for scaling a symbol with a scaling factor derived from an estimate of a signal-to-noise related parameter.' However, the claims do not recite how the signal-to-noise related parameter is estimated. The claims recite limitations such as 'associating (correlating) the count with a value of the signal-to-noise related parameter' but do not recite how this association (correlation) provides an estimation of the signal-to-noise related parameter.

Per a telephone discussion between the Examiner and the Applicants' representative Sarah Guichard, on June 30, 2006, the Examiner indicated that the body of the claims needed to refer to the estimate of the SNR-related parameter. The Applicants herein amend Claims 1, 13, 18, 19, 24, 36, 41, and 42 to include "to arrive at the estimated SNR-related parameter." The Applicants submit that this amendment is for clarity only, and does not alter the scope of the claims. The Applicants respectfully request that in light of these amendments, the Examiner withdraw the 35 USC 112 rejection.

Claim Rejections – 35 U.S.C. §103

B. Claims 1-5, 18, 24-28, and 41 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al., herein referred to as the "Fargues patent" in view of US Patent No. 4,627,103 to Fukuhara, herein referred to as the "Fukuhara patent."

Regarding Claim 1

In the Office Action, the Examiner admitted that the Fargues patent does not disclose "a second logic circuit for associating the count with a value of the SNR-related parameter," as is claimed in Claim 1. However, the Examiner stated that the Fukuhara patent discloses "a first logic (Fig. 4, blocks 5, 6, and 9) for counting a number of received symbols (sample pulses) in a received signal (col. 3, lines 23-40) and a second logic (Fig. 10, col. 3, lines 41-51) for associating this count (subtraction count) with a value of an SNR-related parameter (S/N ratio value) stored in memory." The Examiner concluded that it would have been obvious to one skilled in the art at the time the invention was made to modify the SNR-related parameter estimation of the Fargues patent with the teachings of the Fukuhara patent to allow the system of the Fargues patent

value of the SNR-related parameter since the Fargues patent states (col. 6, lines 12-16) being able to lookup values using memory minimizes the time required for processing. The Applicants respectfully disagree with the conclusions drawn by the Examiner.

According to MPEP 706.02(j), to establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

The Applicants submit that there is no motivation to combine the Fargues and Fukuhara patents. First, the Fargues patent teaches "[a] process of determining the Eb/No ration of a digital transmission ... [wherein,] [t]his process determines the number of erroneous samples received during a given time period whose coordinates correspond to those of indicative samples, the coordinates of the indicative samples being different from those of optimal samples received under optimal transmission conditions. The process then calculates the ratio between the number of erroneous samples and the total number of samples received in this time period, the calculated ratio being inversely proportional to the Eb/No ratio," see Abstract of Fargues. On the other hand, the Fukuhara patent discloses determining "[t]he signal-to-noise ratio of a signal having positive and negative components ... by periodically sampling polarity values of the signal. ... A quantitative measure of the relative accumulated numbers of the sampled values of each polarity is determined. A stored function of signal-to-noise ratio as a function of the quantitative measure and the number of samples is correlated with the derived quantitative measure." Thus the Fargues patent and the Fukuhara patent are directed to two different types of communication systems. In the Fargues patent the

communication system is a “digital communication system having a plurality of phases made up of two data streams in phase quadrature providing in each symbol time a received sample whose position in the constellation is defined by its coordinates obtained by quantizing the data streams” (see Abstract). In contrast, the Fukuhara patent the communication system is not a digital communication system made up of two data streams in phase quadrature, instead the Fukuhara patent discloses a communication system which has a signal having positive and negative components (see Abstract), and samples the instantaneous amplitude, see col. 2, lines 15-19. Since the Fukuhara and Fargues patents are directed toward two very different types of communication systems, there is no motivation to combine these two references.

Further, if proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). The Fukuhara patent teaches that that the subtraction of two counters (5 and 6) should be used to determine a S/N ratio, see col. 3, lines 30-40. Applying that teaching to the Fargues patent, this would result in the subtraction of counters NBEE and NBEO. The Applicants submit that the subtraction of NBEE and NBEO could not be used to derive corresponding S/N ratios or corresponding S/N-related parameters, since NBEE and NBEO are the number of erroneous samples received, and the number of optimal samples received, respectively (see col. 4, lines 33-35), while the outputs of counters 5 and 6 relate to samples of an amplitude of a signal so their probability distributions can be used to correlate to S/N ratios, see col. 5, lines 14-40.

Additionally, the Examiner stated that the Fargues patent, in col. 6, lines 12-16, provided motivation by stating “being able to lookup values using memory minimizes the time required for processing.” The Applicants disagree with the Examiner as to the teaching of the Fargues patent. Col. 6, lines 12-16 state “[a]s previously mentioned, it is also possible to store in the memory 61 only the coordinates of the optimal samples in which case the calculating means 63 calculate the ratio $(NBET - NBEO) / NBET$. This accelerates processing and reduces the size of the memory.” The Applicants submit that there is no mention, reference or implication of “being able to lookup values.” NBEO is the number of optimal samples received, see col. 4, lines 33-34. In the paragraph before

the one cited by the Examiner, the Fugues patent teaches saving the number of erroneous samples (NBEE), calculating the ratio NBEE/NBET, where the NBEE/NBET is inversely proportional to E_b/N_0 . Therefore, the Applicants submit that the accelerated processing and reduction of memory taught by the Fargues patent is due to the saving of only NBEO and not NBEE and the calculation of $(NBET-NBEO)/NBET$ versus NBEE/NBET. This is contrary to the conclusion drawn by the Examiner in order to support the Examiner's argument for a motivation to combine.

In light of the foregoing, the Applicants submit that Claim 1 is patentable over the cited prior art.

Claims 2-5

Claims 2-5 depend on Claim 1. For the reasons given above, the Applicants submit that Claim 1 is patentable over the cited prior art. Therefore, the Applicants submit that Claims 2-5 are also patentable over the cited prior art, at least through their dependence upon an allowable base claim.

Claim 18

In the Office Action, the Examiner rejected Claim 18 by stating "the claimed system includes limitations corresponding to the above subject matter mentioned in claim 1, which is applicable thereto." The Applicants submit that the arguments presented above with respect to Claim 1 are also applicable to Claim 18. Therefore, the Applicants submit that Claim 18 is patentable over the cited prior art.

Claims 24-28

In the Office Action, the Examiner rejected Claims 24-28 by stating "the claimed method includes limitations corresponding to the above subject matter mentioned in claims 1-5 (wherein correlating is equivalent to associating, which is applicable thereto)." The Applicants submit that the arguments presented above with respect to Claim 1 are also applicable to Claim 24. Therefore, the Applicants submit that Claim 24 is patentable over the cited prior art.

Claims 25-28 depend on Claim 24. Therefore, the Applicants submit that Claims 25-28 are patentable over the prior art, at least through their dependence upon an allowable base claim.

Claim 41

In the Office Action, the Examiner rejected Claim 41 by stating “the claimed system includes limitations corresponding to the above subject matter mentioned in claim 1, which is applicable thereto.” The Applicants submit that the arguments presented above with respect to Claim 1 are also applicable to Claim 41. Therefore, the Applicants submit that Claim 41 is patentable over the cited prior art.

C. Claims 13-15, 19-21, 36-38, and 42-45 were rejected under 35 USC 103 as being unpatentable over US Patent No. 6,108,373 to Fargues et al., herein referred to as the “Fargues patent” in view of US Patent No. 4,627,103 to Fukuhara, herein referred to as the “Fukuhara patent” and in further view of US Patent No. 6,484,284 to Smallcomb, herein referred to as the “Smallcomb patent.”

Claim 13

The same arguments presented above can be applied to the first two elements of Claim 13. Additionally, the Applicants submit that there is no motivation to combine the teachings of the Smallcomb patent with the teachings of the Fukuhara patent or the Fargues patent.

In support of the Examiner’s combination of the references, the Examiner stated “it would have been obvious to one skilled in the art at the time the invention was made to modify the system of Fargues et al. and Fukuhara with the teachings of Smallcomb in order to scale and quantize the symbol to produce an optimal signal estimate using the scaling ... factors.” The Applicants submit that neither the Fargues patent nor the Fukuhara patent teach, disclose, or suggest “a symbol” to be scaled or quantized. The Fargues patent is directed toward determining the Eb/No ratio of a transmission channel, determining the Eb/No ratio of an uncoded link, and to detect the loss of carrier recovery, see col. 1, lines 40-52. The Fukuhara patent is directed toward providing “an S/N ratio

determining apparatus for a receiver which produces an accurate S/N ratio of a received signal without being affected by the frequency and/or amplitude of the noise.” Neither the Fukuhara nor the Fargues patent discloses an output of “a symbol” which would be scaled. The output of the Fargues patent is the Eb/No indication, and the Applicants submit that scaling the output with itself would not improve anything and would simply be a waste of processing resources. The output of the Fukuhara patent is the S/N ratio, and again, the Applicants submit that scaling an output with itself would not improve anything and be a waste of processing resources.

Additionally, the proposed modification would render the Fargues patent useless for its intended purpose. As previously noted, the Fargues patent is directed toward determining the Eb/No ratio of an uncoded link. The Smallcomb patent involves a communication system using “code bits generated from one or more sources of data.” If the teachings of Smallcomb were combined with the teachings of the Fargues patent, the Fargues patent would no longer be able to determine the Eb/No ratio of an uncoded link, because the link would now be coded. Therefore, the Applicants submit that there is no motivation to combine the Fukuhara patent, the Fargues patent and the Smallcomb patent. Thus, the Applicants submit that Claim 13 is patentable over the cited prior art.

Claims 14-17

Claims 14-17 depend on Claim 13. For the reasons given above, the Applicants submit that Claim 13 is patentable over the cited prior art. Therefore, the Applicants submit that Claim 14-17 are also patentable over the cited prior art, at least through their dependence upon an allowable base claim.

Claim 19

In the Office Action, the Examiner rejected Claim 19 citing the arguments presented with respect to Claim 13. Therefore, the Applicants submit that Claim 19 is patentable over the cited prior art for the reasons give above with respect to Claim 13.

Claims 20-23

Claims 20-23 depend on Claim 19. For the reasons given above, the Applicants submit that Claim 19 is patentable over the cited prior art. Therefore, the Applicants submit that Claim 20-23 are also patentable over the cited prior art, at least through their dependence upon an allowable base claim.

Claim 36

In the Office Action, the Examiner rejected Claim 36 citing the arguments presented with respect to Claim 13. Therefore, the Applicants submit that Claim 36 is patentable over the cited prior art for the reasons give above with respect to Claim 13.

Claims 37-40

Claims 37-40 depend on Claim 36. For the reasons given above, the Applicants submit that Claim 36 is patentable over the cited prior art. Therefore, the Applicants submit that Claim 37-40 are also patentable over the cited prior art, at least through their dependence upon an allowable base claim.

Claim 42

In the Office Action, the Examiner rejected Claim 42 citing the arguments presented with respect to Claim 13. Therefore, the Applicants submit that Claim 42 is patentable over the cited prior art for the reasons give above with respect to Claim 13.

Claims 43-49

Claims 43-49 depend on Claim 42. For the reasons given above, the Applicants submit that Claim 42 is patentable over the cited prior art. Therefore, the Applicants submit that Claim 43-49 are also patentable over the cited prior art, at least through their dependence upon an allowable base claim.

Allowable Subject Matter

It is the Applicants understanding that Claims 6-12 and 29-35 would be allowable if except for the rejections under 35 U.S.C. §112, second paragraph, set forth in the office action. As stated above, the Applicants believe that the amendments overcome the Examiner's rejections. Therefore, the Applicants submit that Claims 6-12 and 29-35 are allowable.

Concluding Remarks:

For all the foregoing reasons, reconsideration of and withdrawal of all outstanding rejections is respectfully requested. The Examiner is earnestly solicited to allow all claims, and pass this application to issuance.

The Applicants believe that no fees are owed in connection with this response. However, if any fee is in fact owing that is otherwise not accounted for, the Commissioner is hereby authorized to charge Deposit Account No. **08-3038**, (referencing Docket No. **01827.0050.00US00**) for the requisite fee. Additionally, if further extensions of time are required, the Commissioner is authorized to treat this response as including a petition to extend the time period pursuant to 37 CFR 1.136(a) requesting an extension of time of the number of months necessary to make this response timely filed. The petition fee due in connection therewith may be charged to deposit account no. 08-3038.

To expedite allowance of this case, the Examiner is earnestly invited to call the undersigned at (949) 759-5269.

Respectfully submitted,



Robert C. Laurenson, Reg. No. 34,206

Date: August 23, 2006

HOWREY SIMON ARNOLD & WHITE, LLP
2041 Fairview Park Drive, Box No. 7
Falls Church, VA 22042
FAX No. (703) 336-6950
Telephone No. (949) 759-5269